

Part No	CN1102
Description	3-way Switched Live Speed Selector



Issue	Date	Bug no	Comments
2	17 Aug 2018	N/A	Update following CE review
3	14 Sept 2018	N/A	Add CE cert front sheet, correct document number
4	03 Nov 2020	N/A	Photograph and example circuits updated
5	19 Jul 2022	N/A	Updated connection diagrams

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To assure proper usage, we ask you to read these operating instructions carefully before installation and commissioning of the control device.

1.0 Safety Notice

CAUTION – Safety

- The 3-speed switched live controller is only suitable for use on mains low voltage supplies (115/230V, 1~, 50/60Hz AC)
- Electrical installations should only be carried out by qualified personnel
- Live parts are accessible
- This device must be installed in an enclosure that prevents contact to live parts

CAUTION – Electro-Static Discharge

Many modern electronic components are susceptible to damage from Electro-Static Discharge (Static Electricity). During commissioning avoid unnecessary contact with electronic components on PCB's. PCB's which are sensitive to static discharges should be stored and transported in anti-static packaging until they are required to be used.

Warning – Do not operate in an explosive atmosphere

 **Warning – The fans may start during connection. If there is a residual risk of contact with fan, secure the fan safely and ensure accidental contact is avoided before applying power**

2.0 Operating & Commissioning instructions

To download these full operating and maintenance instructions www.ebmpapst.co.uk/instructions

3.0 Introduction

The unit is a built-in appliance intended to be installed in a cabinet or enclosure. The 3-speed switched live EC fan controller is designed for use with ebm-papst electronically commutated fans with a three-wire control interface (+10V DC power supply output, a 0-10V DC analogue speed control input, 0V ground reference). UK Patent GB 2431303 refers.

Interfaces with 4 wires (Tacho or alarm output) can also be connected however there is no connection point or capability to monitor the 4th wire included on the controller.

There are four live connections and two neutrals;

- One Live and one Neutral can be used to provide power to drive a fan with maximum current draw of 1.0A
- One neutral should be connected to the mains supply
- The other three lives should be connected to the Mains supply individually which then activates the corresponding potentiometer on the output of the controller
- There is no provision on the controller for an earth connection.
- The unit must be installed in a secure enclosure to prevent contact with live parts

There is one terminal strip output to the fan or fan array which should be connected to the fan +10V output, 0-10V fan control input and fan ground.

The voltage between the 0-10V output and GND terminals is determined by the potentiometer that is activated by the switched live connections and the position of the potentiometer. There are no limitations on the output of the potentiometer which means each potentiometer can set any output voltage between 0 and 10V to the fan via the terminal strip. The potentiometers are marked as high, medium and low as this would be the expected convention to be used; if unexpected speeds are encountered when switching the live inputs, please check the potentiometer settings.

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4.0 Specification

Product	CN1102
Supply Voltage	115/230V, 1~, 50/60Hz
Supply Current	Maximum 1.0A (Including fans)
Enclosure	IP00
Weight	100g
Operating Environment	0°C to +60°C, 85% RH at 40°C maximum - non-condensing
Compliance	Low voltage Directive 2014/35/EU

Table 1 - Specification

5.0 Installation

The 3-speed switched live EC fan controller - CN1102 – is a built-in appliance designed as a component part to be installed in a clean, dry area within the user's equipment or within an enclosure that prevents access to live parts and reduces the risk of contamination by ingress of dust and moisture.

There is one mounting hole on the rear of the housing that can accommodate a mounting screw with an 8mm diameter pan head and the 2nd screw should use the DIN-rail release clip, or the controller can be DIN-rail mounted.

It is recommended that the control signal cable is kept separate from mains supply wiring and shielded cabling can be used if appropriate to prevent unwanted interference.

Exposure to vibration, high temperatures and direct sunlight should be avoided. The unit shall be installed according to relevant safety guidelines and requirements included in the appropriate standards that form the basis of the low voltage directive.

6.0 Mechanical Outline & Connection Detail

Dimensions

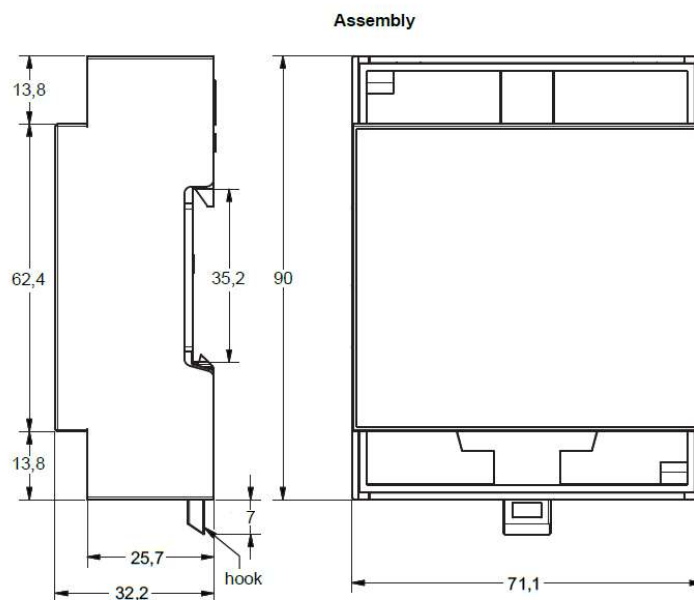
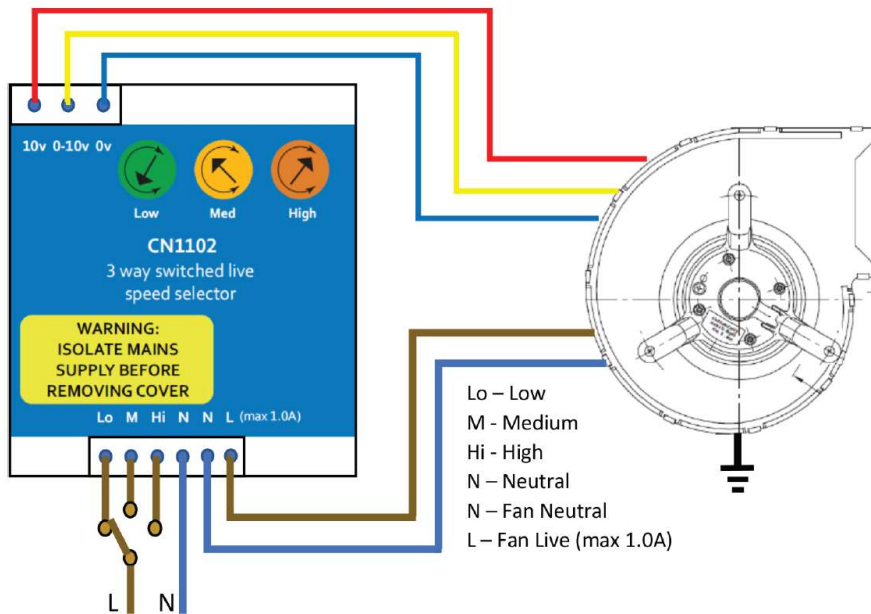


Figure 1 - Dimensions of the unit



Figure 2 - Mains and control connections

Controller connection including power to the fan - **Maximum 1.0A current draw from the fan**



Patent GB 2 431 303

Figure 3 - Wiring diagram below 1 A total load

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Controller connection for fans with current consumption greater than 1.0A or for an array of fans

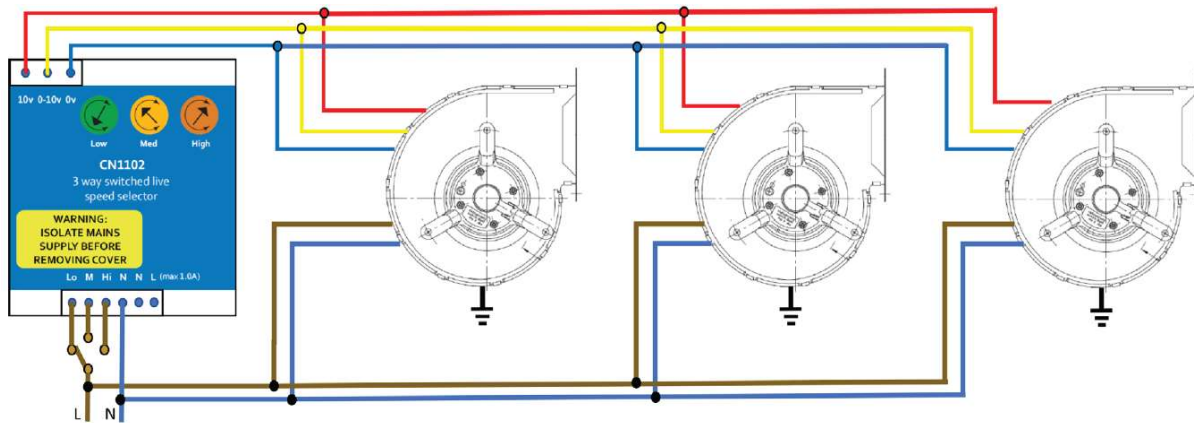


Figure 4 - Wiring diagram above 1 A total load

7.0 Connections

Screw Terminal Block	Designation	Connection
3-way	0	Fan Control GND (Blue Wire)
	0-10	Fan signal wire (Yellow Wire)
	10	+10V output (Red Wire)
6-way	Lo	Switched live to activate Low speed potentiometer
	M	Switched live to activate Medium speed potentiometer
	Hi	Switched live to activate High speed potentiometer
	N	Mains Neutral
	N	Fan Neutral (If used)
	L	Fan Live (Below 1.0A!)

Table 2 - Connections

8.0 Functions

Fan speed adjustment is achieved by changing the wiper position on the potentiometers. A potentiometer output becomes active when mains live is applied to the corresponding input terminal.

Note: the potentiometer range of adjustment is between 0 and 10 K Ω . When more than one fan is connected to the control signal output there will be some loss of linearity and resolution at the higher speed settings according to the control response graphs below.

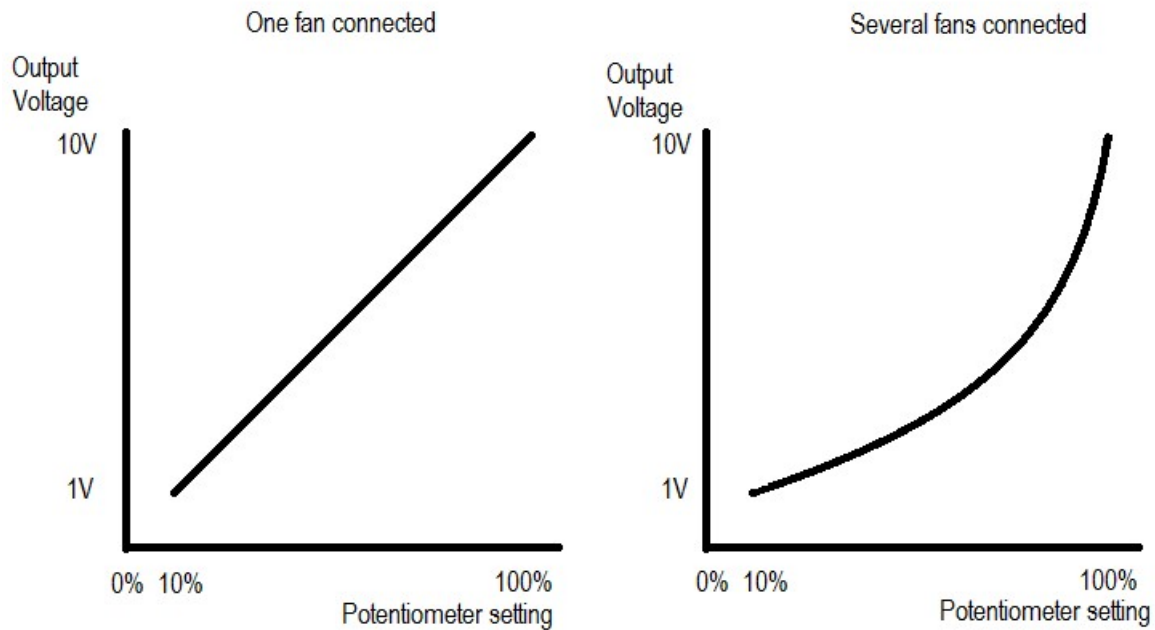


Figure 5 - Graphs of the relationship of pot. setting to control voltage o/p

9.0 Transport and Storage

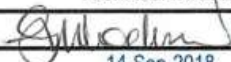
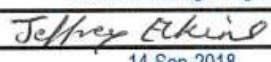
- Store in a dry environment
- Storage temperature: -20°C to +80°C.

10.0 Maintenance and Servicing

There are no user serviceable parts

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CE DECLARATION OF CONFORMITY		
Declaration		
We, ebm-papst UK Ltd, Chelmsford Business Park, Chelmsford, Essex CM2 5EZ certify that the product(s) listed are in conformity with;		
Low Voltage Directive 2014/35/EU		
Household and similar electrical appliances - Safety General Requirements BS EN 60335-1:2012+A13:2017		
	Declaration Approved	Technical File Compiled
Name	G. M. Lockwood	Jeff Elkins
Position	Technical Director	Electronic Design Engineer
Signature		
Date of Declaration	14-Sep-2018	14-Sep-2018
Issue / Bug No	Issue 1	Issue 1
Part number:	CN1102	
Description:	Switched Live Fan Speed Selector, 3 way	
The product(s) have been assessed by the application of the following Standards; BS EN 60335-1 Household and similar		